

### Remarks

This Response corrects an error in the response filed October 11, 2006. On page 1 of that response Applicants elected “**Species 2**, identified as pertaining to a MRAM wherein the cell structure is a MTJ device”; but -- as the Examiner now points out -- on page 14 of that response the statement appears, “Applicants elect Species 1, “pertaining to a MRAM wherein the cell structure is a MTJ device”. Clearly, Applicants intended (and still intends) to elect **Species 2**, and page 14 is corrected herein accordingly.

Claims 1 - 95 are in the application, of which claims 86 - 94 have been withdrawn as being directed to a nonelected species. Accordingly, claims 1 - 85 and 95 are under consideration in the application.

### Election of Species

The Examiner asserted that the “application contains claims directed to the following patentably distinct species:

Species 1, claims 1-2, pertaining to a MRAM wherein the cell structure is a GMR device;

Species 2, claims 1, 3, pertaining to a MRAM wherein the cell structure is a MTJ device;

Species 3, claims 1, 4, pertaining to a MRAM wherein the cell structure comprises a conductor layer;

Species 4, claims 1, 5, pertaining to a MRAM wherein the cell structure comprises an insulator layer;

Species 5, claims 1, 6, pertaining to a MRAM wherein the spin filtering element includes a ferromagnetic material;

Species 6, claims 1, 7-10, pertaining to a MRAM wherein spin filtering element includes a Heusler alloy;

Species 7, claims 1, 11, pertaining to a MRAM wherein spin filtering element includes an oxide based alloy;

Species 8, claims 1, 12-13, pertaining to a MRAM wherein spin filtering element includes a Mn based CMR material;

Species 9, claims 1, 14-16, pertaining to a MRAM wherein spin filtering element includes a Mn based ferromagnetic material;

Species 10, claims 1, 17-19, pertaining to a MRAM wherein spin filtering element includes a oxide based ferromagnetic material;

Species 11, claims 1, 20-21, pertaining to an MRAM wherein the spin holding element comprises a high spin diffusion length;

Species 12, claims 1, 22-24, pertaining to an MRAM wherein the spin holding element comprises B<sub>i</sub>;

Species 13, claims 1, 25-29, pertaining to an MRAM wherein the spin holding element is metal;

Species 14, claims 1, 30-32, pertaining to an MRAM wherein the cell structure is an MTJ having first and second ferromagnetic layers separated by an insulator;

Species 15, claims 1, 30, 33-34, 40, pertaining to an MRAM including a MTJ and a 3d transition ferromagnet material; [...]

Species 16, claims 1, 30, 35-36, pertaining to an MRAM including an MTJ and a 1<sup>st</sup> and 2<sup>nd</sup> ferromagnet layer comprising Heusler alloy;

Species 17, claims 1, 37-38, pertaining to an MRAM including an MTJ and a 1<sup>st</sup> and 2<sup>nd</sup> ferromagnet layer comprising an oxide based alloy;

Species 18, claims 1, 39, 41, pertaining to an MRAM wherein the cell structure is an GMR having first and second ferromagnetic layers separated by a conductor;

Species 19, claims 1, 39, 42-43, pertaining to an MRAM including a GMR and a 3d transition ferromagnet material;

Species 20, claims 1, 39, 44-45, pertaining to an MRAM including an GMR and a 1<sup>st</sup> and 2<sup>nd</sup> ferromagnet layer comprising Heusler alloy;

Species 21, claims 1, 39, 46-47, pertaining to an MRAM including an GMR and a 1<sup>st</sup> and 2<sup>nd</sup> ferromagnet layer comprising an oxide based alloy;

Species 22, claims 1, 30, 48-49, pertaining to an MRAM including a spin-valve MJT [*sic*];

Species 23, claims 1, 30, 32, 49, 50-51, pertaining to an MRAM including a MJT [*sic*] and a pinning layer comprising an antiferromagnetic multilayer;

Species 24, claims 1, 30, 32, 49, 53-54, pertaining to an MRAM including a MJT [*sic*] and a pinning layer comprising a synthetic antiferromagnetic multilayer;

Species 25, claims 1, 30, 32, 49, 55-56, pertaining to an MRAM including a MJT [*sic*] and a pinning layer comprising an antiferromagnetic multilayer and a synthetic antiferromagnetic multilayer;

Species 26, claims 1, 30, 32, 49, 57-58, pertaining to an MRAM including a MJT [*sic*] and a pinning layer comprising a permanent magnet material;

Species 27, claims 1, 30, 59-62, pertaining to an MRAM including a pseudo-spin valve MTJ with a soft ferromagnetic layer;

Species 28, claims 1, 30, 63-65, pertaining to an MRAM including a MTJ comprising a granular material;

Species 29, claims 1, 39, 66-67, pertaining to an MRAM including a spin-valve GMR;

Species 30, claims 1, 39, 67-70, pertaining to an MRAM including a GMR and a pinning layer comprising an antiferromagnetic multilayer;

Species 31, claims 1, 39, 67, 71-72, pertaining to an MRAM including a GMR and a pinning layer comprising a synthetic antiferromagnetic multilayer;

Species 32, claims 1, 39, 41, 67, 73-74, pertaining to an MRAM including a GMR and a pinning layer comprising an antiferromagnetic multilayer and a synthetic antiferromagnetic multilayer;

Species 33, claims 1, 39, 41, 67, 75-76, pertaining to an MRAM including a GMR and a pinning layer comprising a permanent magnet material;

Species 34, claims 1, 39, 77-80, pertaining to an MRAM including a pseudo-spin valve GMR with a soft ferromagnetic layer;

Species 35, claims 1, 39, 81-83, pertaining to an MRAM including a GMR comprising a granular material;

Species 36, claims 1, 39, 84-85, pertaining to a MRAM with a GMR multilayer structure.

Species 37, claims 1, 95, pertaining to an MRAM array.”

Applicants elect Species 2, “pertaining to a MRAM wherein the cell structure is a MTJ device”, for prosecution on the merits in this application. The following is a listing of claims believed to be readable on the elected species:

**1, 3, 5, 30 - 38, 48 - 65.**

The identification of species is not well understood and, to the extent the Examiner may disagree with the listing of claims believed to be readable on the elected species, the requirement for election of species as identified is **traversed**. MPEP 806.04(f) states:

Where two or more species are claimed, **a requirement for restriction to a single species may be proper if the species are mutually exclusive**. Claims to different species are mutually exclusive if one claim recites limitations disclosed for a first species but not a second, while a second claim recites limitations disclosed only for the second species and not the first. This may also be expressed by saying that **to require restriction between claims limited to species, the claims must not overlap in scope**.

The Examiner has not shown how, for example, species 2 is mutually exclusive of any of species 22 - 28. Species 2 is identified as “pertaining to a MRAM wherein the cell structure is a MTJ device”. Each of species 23 - 26 is identified as “pertaining to an MRAM including a MJT [*sic*; surely this is a typographical error, “MTJ” having been intended] ...”; claim 22 is identified as “pertaining to an MRAM including a spin-valve MJT [*sic*] ...”; claim 28 is identified as “pertaining to an MRAM including a MTJ ...”. Claim 27 is identified as “pertaining to an MRAM including a

pseudo-spin valve spin-valve MJT". Is a spin valve MTJ not an MTJ device, in the Examiner's view? Is a pseudo spin valve MTJ not an MTJ device, in the Examiner's view?

Claim 3 recites "claim 1 ... wherein the cell structure comprises a MTJ device"; claim 30 recites "claim 1 ... wherein the cell structure comprises a MTJ system". All the remaining claims believed to read on Species 2 depend from claim 30 and, accordingly, each of them also includes the claim 30 recitation "wherein the cell structure comprises a MTJ system". Accordingly, each of the listed claims pertains to an MRAM including a MTJ, to which Species 2 was identified by the Examiner.

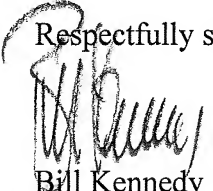
If the Examiner disagrees with the listing presented above, then some explanation is respectfully requested.

As the Examiner noted, claim 1 is generic.

All the claims in the application are believed to be in condition for allowance, and action to that effect is respectfully requested.

If the Examiner determines that a conference would facilitate prosecution of this application, the Examiner is invited to telephone Applicant's representative, undersigned, at the telephone number set out below.

Respectfully submitted,

  
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